

Appendix C

Copy ofAppealed claims

in SN 08/485, 161

(9) Appendix of Claims on Appeal

1. A method of cooling a surface by nucleate boiling, comprising:

(a) providing a polished, photo etched surface containing a predetermined minimum surface density of discrete nucleation sites having a conical cross-section tapering to at least a minimum predetermined depth;

(b) immersing said surface in a refrigerant having a liquid contact angle of less than 5° and a preselected boiling point so that said nucleation sites become substantially flooded by said refrigerant, wherein said conical cross-section has a cavity cone angle, θ , which is greater than the liquid contact angle, Γ , of said refrigerant; and

(c) permitting said surface to heat up to a temperature of at least said preselected boiling point, said heating initiating nucleate boiling of said refrigerant with a reversal of trend of less than 2°C and without a temperature overshoot on the initial ascent.

3. The method of claim 2, wherein said minimum predetermined depth is at least about $5\mu\text{m}$, and a significant portion of said sites have an aspect ratio of greater than about .5.

4. The method of claim 1, wherein said surface comprises a semi-conductor.

5. The method of claim 1, wherein said refrigerant has a liquid contact angle of less than 5°.

6. The method of claim 1, wherein said nucleate boiling initiates with a temperature hysteresis of less than 4.0°C.

7. The method of claim 1, wherein said nucleate boiling initiates with a temperature hysteresis of less than 2°C.

9. The method of claim 1, wherein said nucleate boiling initiates without a reversal of trend.

34. The method of claim 1, wherein said minimum predetermined depth is greater than about $3\mu\text{m}$ and a significant portion of said sites have an aspect ratio greater than .3.

35. The method of claim 34, wherein said nucleation sites include a spacing of $60\mu\text{m}$.
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36. The method of claim 34, wherein said nucleation sites include a spacing of $40\mu\text{m}$.
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